pressure line **52** to the injector **50** by virtue of the cross drillings **96**, **98** in the outer valve member **90**.

[0129] If the nozzle control valve **54** is actuated when the valve **262** is in this first valve position, the pressure of fuel injected to the engine is therefore at the first, moderate rail pressure, P**1**, as described previously.

[0130] Upon partial energisation of the winding **84** to a first energisation level, the force applied to the armature **82** causes the outer valve member **90** to move against the force of the outer valve return spring **92**, so that the outer valve member **90** moves away from the first valve seating **100** and an outer surface of the outer valve member **90** is brought into engagement with the second seating **102** defined by the inner valve member **80**. The force due to the inner valve return spring **86** is large enough to ensure the inner valve member **80** remains seated against the stop surface **88**. Communication between the rail pressure line **61** and the high pressure supply line **52** is therefore broken as fuel is no longer able to flow past the second seating surface **102**.

[0131] As the outer valve member **90** has been moved away from the first valve seating **100**, however, the high pressure line **52** is brought into communication with the return line **74** through the flow path **99** defined at the end of the inner valve member **80**. This operating condition of the valve **262** is referred to as "the third valve position", as shown in **FIG. 10**. It will be appreciated that the seatings **102**, **104** are arranged and positioned such that in this third valve position the outer valve member **90** remains spaced from the third seating **104** to ensure fuel within the high pressure line **52** is able to flow to the return line **74**.

[0132] When the winding is energised to a higher energisation level, there is sufficient force on the armature **82** to overcome the force due to the inner valve return spring **86**. This causes further movement of the outer valve member **90** away from the first seating surface **100** and additionally causes movement of the outer valve member **90** to be coupled to the inner valve member **80** by virtue of engagement between the outer valve member and the second seating **102**. The coupling of the outer valve member **90** to the inner valve member **80** causes the inner valve member **80** to be lifted away from the stop surface **88**. The outer valve member **90** is brought into engagement with the third seating **104**. This shall be referred to as the second valve position, in which position fuel is unable to flow past the third seating **104** so that communication between the high pressure supply line **52** and the return line **74** is broken. Communication between the rail pressure line **61** and the high pressure supply line **52** remains broken due to the valves **80**, **90** being engaged at the second seating **102**, and so it is in this position (position **2**) that pumping by the plunger **66** results in the second, higher pressure level (P2) being achieved in the pump chamber **64**.

[0133] It will be appreciated that the three-position valve **262** in FIGS. **9** to **11** provides a means of operating the fuel injection system in the same manner as described with reference to FIGS. **3** to **5**. In addition, however, because communication between the high pressure supply line **52** and the return line **74** can be opened with the valve **262** in the third operating position, whilst maintaining pressure in the rail pressure line **61** (and hence the common rail **59**) at the moderate, rail pressure, it is also possible to terminate injection using a spill-end type of injection. By moving the valve **262** into its third operating position, pressure of fuel in the high pressure supply line **52** is reduced and the valve needle **55** is caused to close under the force of the spring **53**. Termination of injection can therefore be implemented without operating the nozzle control valve **54**, if desired. It has been found that this may provide an improved fuel spray formation at the end of injection.

[0134] In addition to moving the three-position valve **262** into its third position to terminate injection, the nozzle control valve **54** may also be operated at the same time so as to achieve a more rapid end to injection, if desired.

[0135] The three-position valve show in FIGS. **9** to **11** is one example of a valve structure for achieving the three desired operating positions **1**, **2** and **3**, but other valve structures for achieving this are also envisaged. For example, in an alternative embodiment the inner valve **80** may be coupled to the armature **82**, with the outer valve member **90** being coupled to move with the inner valve member **80** under partial energisation conditions. A separate European patent application, filed concurrently with the present application, describes other possible configurations for a three-position valve **262** of this type in further detail.

[0136] A further alternative embodiment to those shown described previously is shown in **FIG. 12**. Similar parts to those shown in **FIG. 8** are identified with like reference numerals and will not be described in further detail. In this embodiment, the rail control valve **62** is provided, as before, to control whether the pump chamber **64** communicates with the common rail **59**. In addition, a non return valve **362** is provided, having a non return spring **364**, to control communication between the transfer pump **72** and the pump chamber **64**. The non return valve **362** is hydraulically operable in dependence upon the fuel pressure difference across it. During the return stroke of the plunger **66** when fuel pressure in the pump chamber **64** is decreasing, the pressure of fuel supplied by the transfer pump **72** is sufficient to overcome the force of the non return spring **364** so that the non-return valve **362** is opened and fuel is supplied from the transfer pump **72** to the pump chamber **64**. As the pumping plunger **66** is driven to perform its pumping stroke, the pressure of fuel in the pump chamber **64** will be increased and the non-return valve **362** is caused to close and continued pumping causes the pressure of fuel within the pump chamber **64** to increase further.

[0137] As described previously, if the rail control valve **62** is in its open state the pressure of fuel within the pump chamber **64** is pressurised to a first, moderate rail pressure, but if the rail control valve **62** is closed fuel pressure within the pumping chamber **64** will be increased to the second, higher level.

[0138] In order to inject fuel at the first, moderate rail pressure level, P**1**, the rail control valve **62** is opened so that the pump chamber **64** communicates with the common rail **59**. In order to inject fuel at the second, higher pressure level, P**2**, the rail control valve **62** is closed, so that communication between the pump chamber **64** and the common rail **59** is broken.

[0139] The combination of the rail control valve **62** and the non return valve **362** in the embodiment of **FIG. 12** therefore provides a similar function to the rail control valve **62** and the fill/spill **162** in **FIG. 8**, and to the three-position